Package 'ggcharts'

October 13, 2022

Type Package

Title Shorten the Distance from Data Visualization Idea to Actual Plot

Version 0.2.1

Description Streamline the creation of common charts by taking care of a lot of data preprocessing and plot customization for the user. Provides a high-level interface to create plots using 'ggplot2'.

Depends R (>= 3.5.0), ggplot2 (>= 3.0.0)

Imports colorspace, dplyr, lifecycle, magrittr, patchwork, rlang

Suggests gapminder, knitr, lintr, rmarkdown, scales, spelling, tibble, tidyr, testthat (>= 2.1.0), vdiffr

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URL https://github.com/thomas-neitmann/ggcharts

BugReports https://github.com/thomas-neitmann/ggcharts/issues

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R topics documented:

`bar_chart` *Bar Chart*

Description

Easily create a bar chart

Usage

```
bar_chart(
  data,
  x,
  y,
  facet = NULL,
  ...,
  bar_color = "auto",
  highlight = NULL,
  sort = TRUE,
  horizontal = TRUE,
  top_n = NULL,
  threshold = NULL,
  other = FALSE,
  limit = NULL
)

column_chart(
  data,
  x,
  y,
  facet = NULL,
  ...,
```

```
  bar_color = "auto",
  highlight = NULL,
  sort = NULL,
  horizontal = FALSE,
  top_n = NULL,
  threshold = NULL,
  limit = NULL
)
```

Arguments

data	Dataset to use for the bar chart
x	character or factor column of data
y	numeric column of data representing the bar length. If missing, the bar length will be proportional to the count of each value in x.
facet	character or factor column of data defining the faceting groups
...	Additional arguments passed to aes()
bar_color	character. The color of the bars
highlight	character. One or more value(s) of x that should be highlighted in the plot
sort	logical. Should the data be sorted before plotting?
horizontal	logical. Should the plot be oriented horizontally?
top_n	numeric. If a value for top_n is provided only the top top_n records will be displayed
threshold	numeric. If a value for threshold is provided only records with y > threshold will be displayed
other	logical. Should all x with y < threshold be summarized in a group called 'other' and be displayed at the bottom of the chart?
limit	Deprecated. use top_n instead.

Details

Both top_n and threshold only work when sort = TRUE. Attempting to use them when sort = FALSE will result in an error. Furthermore, only top_n or threshold can be used at a time. Providing a value for both top_n and threshold will result in an error as well.

column_chart() is a shortcut for bar_chart() with horizontal = FALSE and sort = FALSE if x is numeric.

Value

An object of class ggplot

Author(s)

Thomas Neitmann

See Also

For more details have a look at these vignettes: `vignette("highlight", package = "ggcharts")` `vignette("customize", package = "ggcharts")`

Examples

```
data(biomedicalrevenue)
revenue2018 <- biomedicalrevenue[biomedicalrevenue$year == 2018, ]
revenue_roche <- biomedicalrevenue[biomedicalrevenue$company == "Roche", ]

## By default bar_chart() creates a horizontal and sorted plot
bar_chart(revenue2018, company, revenue)

## If the `y` argument is missing the count of each value in `x` is displayed
bar_chart(mtcars, cyl)

## Create a vertical, non-sorted bar chart
bar_chart(revenue_roche, year, revenue, horizontal = FALSE, sort = FALSE)

## column_chart() is a shortcut for the above
column_chart(revenue_roche, year, revenue)

## Limit the number of bars to the top 10
bar_chart(revenue2018, company, revenue, top_n = 10)

## Display only companies with revenue > 40B.
bar_chart(revenue2018, company, revenue, threshold = 40)

## Change the bar color
bar_chart(revenue2018, company, revenue, bar_color = "purple")

## Highlight a single bar
bar_chart(revenue2018, company, revenue, top_n = 10, highlight = "Roche")

## Use facets to show the top 10 companies over the years
bar_chart(biomedicalrevenue, company, revenue, facet = year, top_n = 10)
```

---

biomedicalrevenue *Top Biomedical Companies Revenues.*

Description

Annual revenues of top biomedical companies from 2011 to 2018.

Usage

```
biomedicalrevenue
```

Format

A data frame with 224 rows and 3 variables:

company Name of the company

year Fiscal year

revenue Revenue in billion USD

Source

https://en.wikipedia.org/wiki/List_of_largest_biomedical_companies_by_revenue

---

diverging_bar_chart *Diverging Bar Chart*

Description

Easily create a diverging bar chart

Usage

```
diverging_bar_chart(
  data,
  x,
  y,
  bar_colors = c("#1F77B4", "#FF7F0E"),
  text_color = "auto",
  text_size = 10
)
```

Arguments

`data`	Dataset to use for the diverging bar chart
`x`	`character` or `factor` column of `data`
`y`	`numeric` column of `data` representing the bar length
`bar_colors`	A `character` vector of length 2 containing the colors for the positive and negative bars
`text_color`	`character`. The color for the bar annotations
`text_size`	`numeric`. The size of the bar annotation text in pt

Value

An object of class `ggplot`

Author(s)

Thomas Neitmann

See Also

To learn how to further customize this plot have a look at the 'customize' vignette: `vignette("customize", package = "ggcharts")`

Examples

```
if (requireNamespace("tidyr")) {
  library(magrittr)
  data(biomedicalrevenue)
  biomedicalrevenue %>%
  dplyr::filter(year > 2016) %>%
  tidyr::pivot_wider(
    values_from = revenue,
    names_from = year,
    names_prefix = "revenue_"
  ) %>%
  dplyr::mutate(diff = revenue_2018 - revenue_2017) %>%
  diverging_bar_chart(company, diff)
}

data(mtcars)
mtcars_z <- dplyr::transmute(
  .data = mtcars,
  model = row.names(mtcars),
  hpz = scale(hp)
)

diverging_bar_chart(mtcars_z, model, hpz)

## Change the colors
diverging_bar_chart(mtcars_z, model, hpz, bar_color = c("darkgreen", "darkred"))

## Increase the axis label font size
diverging_bar_chart(mtcars_z, model, hpz, text_size = 14)

## Display the axis label text in the same color as the bars
diverging_bar_chart(mtcars_z, model, hpz, text_color = c("#1F77B4", "#FF7F0E"))
```

---

diverging_lollipop_chart

Diverging Lollipop Chart

Description

Easily create a diverging lollipop chart

Usage

```
diverging_lollipop_chart(
  data,
  x,
  y,
  lollipop_colors = c("#1F77B4", "#FF7F0E"),
  line_size = 0.75,
  point_size = 3,
  text_color = "auto",
  text_size = 10
)
```

Arguments

data	Dataset to use for the diverging lollipop chart
x	character or factor column of data
y	numeric column of data representing the lollipop length
lollipop_colors	A character vector of length 2 containing the colors for the positive and negative lollipops
line_size	numeric. Size of the lollipop 'stick'
point_size	numeric. Size of the lollipop 'head'
text_color	character. The color for the lollipop annotations
text_size	numeric The size of the lollipop annotation text in pt

Value

An object of class ggplot

Author(s)

Thomas Neitmann

See Also

To learn how to further customize this plot have a look at the 'customize' vignette: `vignette("customize", package = "ggcharts")`

Examples

```
if (requireNamespace("tidyr")) {
  library(magrittr)
  data(biomedicalrevenue)
  biomedicalrevenue %>%
  dplyr::filter(year > 2016) %>%
  tidyr::pivot_wider(
    values_from = revenue,
    names_from = year,
```

```
    names_prefix = "revenue_"
  ) %>%
  dplyr::mutate(diff = revenue_2018 - revenue_2017) %>%
  diverging_lollipop_chart(company, diff)
}

data(mtcars)
mtcars_z <- dplyr::transmute(
  .data = mtcars,
  model = row.names(mtcars),
  hpz = scale(hp)
)

diverging_lollipop_chart(mtcars_z, model, hpz)

## Change the colors
diverging_lollipop_chart(mtcars_z, model, hpz, lollipop_colors = c("darkgreen", "darkred"))

## Increase the axis label font size
diverging_lollipop_chart(mtcars_z, model, hpz, text_size = 14)

## Display the axis label text in the same color as the bars
diverging_lollipop_chart(mtcars_z, model, hpz, text_color = c("#1F77B4", "#FF7F0E"))
```

---

dumbbell_chart *Dumbbell Chart*

Description

Easily create a dumbbell chart

Usage

```
dumbbell_chart(
  data,
  x,
  y1,
  y2,
  line_size = 1.5,
  line_color = "lightgray",
  point_size = 4,
  point_colors = c("#1F77B4", "#FF7F0E"),
  sort = TRUE,
  horizontal = TRUE,
  top_n = NULL,
  legend = TRUE,
  legend_labels = waiver(),
  limit = NULL
)
```

Arguments

data	Dataset to use for the dumbbell chart
x	character or factor column of data
y1	numeric column of data representing the dumbbell end
y2	numeric column of data representing the dumbbell start
line_size	numeric. Line width
line_color	character. Line color
point_size	numeric. Point size
point_colors	numeric. Point color
sort	logical. Should the data be sorted by y2 before plotting?
horizontal	logical. Should the plot be displayed horizontally?
top_n	integer. If a value for top_n is provided only the first top_n records will be displayed
legend	logical. Should a legend be displayed?
legend_labels	character. Custom labels to be displayed in the legend
limit	Deprecated. use top_n instead.

Value

An object of class ggplot

Author(s)

Thomas Neitmann

See Also

To learn how to further customize this plot have a look at the 'customize' vignette: `vignette("customize", package = "ggcharts")`

Examples

```
data(popeurope)

dumbbell_chart(popeurope, country, pop1952, pop2007)

# Display only the top 10 countries in terms of population in 2007
dumbbell_chart(popeurope, country, pop1952, pop2007, top_n = 10)

# Change line and point color
dumbbell_chart(popeurope, country, pop1952, pop2007, top_n = 10,
               line_color = "lightgray", point_color = c("lightgray", "black"))

# Add custom legend labels
dumbbell_chart(popeurope, country, pop1952, pop2007, top_n = 10,
               legend_labels = c("1952", "2007"))
```

```
# Increase line width and point size
dumbbell_chart(popeurope, country, pop1952, pop2007, top_n = 10,
               line_size = 2, point_size = 5)
```

---

ggcharts_get_default_color *Get the Default Color for a ggcharts Theme*

Description

Retrieve the color used by default for a given ggcharts theme

Usage

```
ggcharts_get_default_color(theme)
```

Arguments

theme	character. The name of a ggcharts theme.

Value

The default color for the given theme as a character

Author(s)

Thomas Neitmann

Examples

```
ggcharts_get_default_color("theme_hermit")
ggcharts_get_default_color("theme_ng")
```

ggcharts_get_theme *Get and Set the Currently Active ggcharts Theme*

Description

The current theme is automatically applied to any plot created with ggcharts. It does not affect plots created with ggplot2.

Usage

```
ggcharts_get_theme()

ggcharts_set_theme(theme, ...)
```

Arguments

theme	character. The name of the theme, e.g. "theme_hermit"
...	Additional argument passed onto the specified theme

Value

ggchart_set_theme invisibly returns the name of the previously active theme as a character. ggchart_get_theme returns the name of the currently active theme as a character.

Author(s)

Thomas Neitmann

Examples

```
data("diamonds", package = "ggplot2")

## By default `theme_ggcharts()` is used
ggcharts_get_theme()
bar_chart(diamonds, cut)

ggcharts_set_theme("theme_hermit")
bar_chart(diamonds, cut)

ggcharts_set_theme("theme_ng")
bar_chart(diamonds, cut)

ggcharts_set_theme("theme_nightblue", base_size = 16, base_family = "serif")
bar_chart(diamonds, cut)

## Restore the default
ggcharts_set_theme("theme_ggcharts")
```

highlight_spec *Highlight Specification*

Description

Create a highlight specification to pass on to a chart function

Usage

```
highlight_spec(what, highlight_color = NULL, other_color = NULL)
```

Arguments

what	character The value(s) to highlight
highlight_color	character The highlight color(s)
other_color	character The color for the non-highlighted values

Details

highlight_color must be of length 1 or the same length as what. If it is of length 1 then all values in what are highlighted with the same color.

If highlight_color is NULL (the default) then it is set to the default color of the currently active ggcharts theme, i.e. ggcharts_get_default_color(ggcharts_get_theme()).

If other_color is NULL is is automatically determined from the background color of the currently active ggcharts theme.

Value

An object of class ggcharts_highlight_spec

Author(s)

Thomas Neitmann

Examples

```
data("biomedicalrevenue")
revenue2018 <- biomedicalrevenue[biomedicalrevenue$year == 2018, ]

spec <- highlight_spec("Bayer")
bar_chart(revenue2018, company, revenue, highlight = spec)

spec <- highlight_spec("Bayer", "black", "gray")
bar_chart(revenue2018, company, revenue, highlight = spec)

spec <- highlight_spec(c("Bayer", "Novartis"))
```

```
bar_chart(revenue2018, company, revenue, highlight = spec)

spec <- highlight_spec(c("Bayer", "AstraZeneca"), c("darkgreen", "darkorange"))
bar_chart(revenue2018, company, revenue, highlight = spec)

ggcharts_set_theme("theme_ng")
spec <- highlight_spec("Novartis")
lollipop_chart(revenue2018, company, revenue, highlight = spec)
```

`lollipop_chart` *Lollipop Chart*

Description

Easily create a lollipop chart

Usage

```
lollipop_chart(
  data,
  x,
  y,
  facet = NULL,
  ...,
  line_size = 0.75,
  line_color = "auto",
  point_size = 4,
  point_color = line_color,
  highlight = NULL,
  sort = TRUE,
  horizontal = TRUE,
  top_n = NULL,
  threshold = NULL,
  other = FALSE,
  limit = NULL
)
```

Arguments

`data`	Dataset to use for the bar chart
`x`	`character` or `factor` column of `data`
`y`	`numeric` column of `data` representing the lollipop length. If missing, the lollipop length will be proportional to the count of each value in `x`.
`facet`	`character` or `factor` column of `data` defining the faceting groups
`...`	Additional arguments passed to `aes()`

line_size	numeric. Size of the lollipop 'stick'
line_color	character. Color of the lollipop 'stick'
point_size	numeric. Size of the lollipop 'head'
point_color	character. Color of the lollipop 'head'
highlight	character. One or more value(s) of x that should be highlighted in the plot
sort	logical. Should the data be sorted before plotting?
horizontal	logical. Should the plot be oriented horizontally?
top_n	numeric. If a value for top_n is provided only the top top_n records will be displayed
threshold	numeric. If a value for threshold is provided only records with y > threshold will be displayed
other	logical. Should all x with y < threshold be summarized in a group called 'other' and be displayed at the bottom of the chart?
limit	Deprecated. use top_n instead.

Details

Both top_n and threshold only work when sort = TRUE. Attempting to use them when sort = FALSE will result in an error. Furthermore, only top_n or threshold can be used at a time. Providing a value for both top_n and threshold will result in an error as well.

Value

An object of class ggplot

Author(s)

Thomas Neitmann

See Also

For more details have a look at these vignettes: vignette("highlight", package = "ggcharts") vignette("customize", package = "ggcharts")

Examples

```
data(biomedicalrevenue)
revenue2016 <- biomedicalrevenue[biomedicalrevenue$year == 2016, ]
revenue_bayer <- biomedicalrevenue[biomedicalrevenue$company == "Bayer", ]

## By default lollipop_chart() creates a horizontal and sorted plot
lollipop_chart(revenue2016, company, revenue)

## If the `y` argument is missing the count of each value in `x` is displayed
lollipop_chart(mtcars, cyl)

## Create a vertical, non-sorted lollipop chart
```

```
lollipop_chart(revenue_bayer, year, revenue, horizontal = FALSE, sort = FALSE)

## Limit the number of lollipops to the top 15
lollipop_chart(revenue2016, company, revenue, top_n = 15)

## Display only companies with revenue > 50B.
lollipop_chart(revenue2016, company, revenue, threshold = 50)

## Change the color of the whole lollipop
lollipop_chart(revenue2016, company, revenue, line_color = "purple")

## Change the color of the lollipop stick and head individually
lollipop_chart(revenue2016, company, revenue, point_color = "darkgreen", line_color = "gray")

## Decrease the lollipop head size
lollipop_chart(revenue2016, company, revenue, point_size = 2.5)

## Highlight a single lollipop
lollipop_chart(revenue2016, company, revenue, top_n = 15, highlight = "Roche")

## Use facets to show the top 10 companies over the years
lollipop_chart(biomedicalrevenue, company, revenue, facet = year, top_n = 10)
```

---

popch *Population Statistics of Switzerland*

Description

Swiss population in 2020 by five-year age groups

Usage

```
popch
```

Format

A data frame with 42 rows and 3 variables:

age Five-year age group

sex Sex

pop Population

Source

US Census International Data Base

popeurope *European Population*

Description

Population of European countries in 1952 and 2007

Usage

```
popeurope
```

Format

A data frame with 30 rows and 3 variables:

country Name of the country

pop1952 Population in 1952 (in millions)

pop2007 Population in 2007 (in millions)

Source

http://www.gapminder.org/data/

pyramid_chart *Pyramid Chart*

Description

Easily create a pyramid chart

Usage

```
pyramid_chart(
  data,
  x,
  y,
  group,
  bar_colors = c("#1F77B4", "#FF7F0E"),
  sort = "no",
  xlab = NULL,
  title = NULL
)
```

Arguments

data	Dataset to use for the pyramid chart
x	character or factor column of data
y	numeric column of data
group	character or factor column of data
bar_colors	character vector of length 2 containing colors
sort	character. Should the bars be sorted? By default "no".
xlab	character. X axis label
title	character. Plot title. By default no title is displayed.

Value

An object of class ggplot

Author(s)

Thomas Neitmann

Examples

```
data(popch)

pyramid_chart(popch, age, pop, sex)

## Change bar colors
pyramid_chart(popch, age, pop, sex, bar_colors = c("darkgreen", "darkorange"))

## Change x axis label and add title
pyramid_chart(popch, age, pop, sex, xlab = "Population", title = "Switzerland 2020")
```

---

theme_ggcharts *Theme ggcharts*

Description

The default ggcharts theme

Usage

```
theme_ggcharts(
  base_size = 14,
  base_family = "",
  axis = "",
  ticks = "",
  grid = ""
)
```

Arguments

base_size	numeric. Base font size in pt
base_family	character. Base font family
axis	character. Where to draw an axis line
ticks	character. Where to draw axis ticks
grid	character. Where to draw grid lines

Details

theme_ggcharts is the default theme used when creating any plot with ggcharts.

Value

An object of class theme

Author(s)

Thomas Neitmann

See Also

For more details see the 'theme' vignette: vignette("theme", package = "ggcharts")

Examples

```
library(ggplot2)
library(dplyr)

scatter <- ggplot(mtcars, aes(hp, mpg)) +
  geom_point(color = "steelblue")

scatter + theme_ggcharts()

scatter + theme_ggcharts(grid = "XY")

scatter + theme_ggcharts(axis = "xy", ticks = "xy")

bar_chart(ggplot2::diamonds, cut) +
  theme_ggcharts(axis = "y", grid = "Y")

column_chart(ggplot2::diamonds, cut) +
  theme_ggcharts(axis = "x", grid = "X")

ggcharts::biomedicalrevenue %>%
  filter(company == "Roche") %>%
  ggplot(aes(year, revenue)) +
  geom_line(color = "steelblue", size = 1) +
  scale_y_continuous(expand = expand_scale(c(0, .05))) +
  theme_ggcharts(grid = "X", axis = "x", ticks = "x")
```

`theme_hermit` *Theme Hermit*

Description

A ggplot2 theme inspired by the 'hermit' Hugo theme

Usage

```
theme_hermit(
  base_size = 14,
  base_family = "",
  axis = "",
  ticks = "",
  grid = ""
)
```

Arguments

`base_size`	`numeric`. Base font size in pt
`base_family`	`character`. Base font family
`axis`	`character`. Where to draw an axis line
`ticks`	`character`. Where to draw axis ticks
`grid`	`character`. Where to draw grid lines

Value

An object of class `theme`

Author(s)

Thomas Neitmann

See Also

For more details see the 'theme' vignette: `vignette("theme", package = "ggcharts")`

Examples

```
library(ggplot2)
library(dplyr)

scatter <- ggplot(mtcars, aes(hp, mpg)) +
  geom_point(color = "yellow")

scatter + theme_hermit()
```

```
scatter + theme_hermit(grid = "XY")

scatter + theme_hermit(axis = "xy", ticks = "xy")

bar_chart(ggplot2::diamonds, cut, bar_color = "darkorange") +
  theme_hermit(axis = "y", grid = "Y")

column_chart(ggplot2::diamonds, cut, bar_color = "darkorange") +
  theme_hermit(axis = "x", grid = "X")

ggcharts::biomedicalrevenue %>%
  filter(company == "Roche") %>%
  ggplot(aes(year, revenue)) +
  geom_line(color = "yellow", size = 1) +
  scale_y_continuous(expand = expand_scale(c(0, .05))) +
  theme_hermit(grid = "X", axis = "x", ticks = "x")
```

`theme_ng` *Theme NG*

Description

A ggplot2 theme inspired with the 'hello friend ng' Hugo theme

Usage

```
theme_ng(base_size = 14, base_family = "", axis = "", ticks = "", grid = "")
```

Arguments

`base_size`	`numeric`. Base font size in pt
`base_family`	`character`. Base font family
`axis`	`character`. Where to draw an axis line
`ticks`	`character`. Where to draw axis ticks
`grid`	`character`. Where to draw grid lines

Value

An object of class `theme`

Author(s)

Thomas Neitmann

See Also

For more details see the 'theme' vignette: `vignette("theme", package = "ggcharts")`

Examples

```
library(ggplot2)
library(dplyr)

scatter <- ggplot(mtcars, aes(hp, mpg)) +
  geom_point(color = "yellow")

scatter + theme_ng()

scatter + theme_ng(grid = "XY")

scatter + theme_ng(axis = "xy", ticks = "xy")

bar_chart(ggplot2::diamonds, cut, bar_color = "darkorange") +
  theme_ng(axis = "y", grid = "Y")

column_chart(ggplot2::diamonds, cut, bar_color = "darkorange") +
  theme_ng(axis = "x", grid = "X")

ggcharts::biomedicalrevenue %>%
  filter(company == "Roche") %>%
  ggplot(aes(year, revenue)) +
  geom_line(color = "yellow", size = 1) +
  scale_y_continuous(expand = expand_scale(c(0, .05))) +
  theme_ng(grid = "X", axis = "x", ticks = "x")
```

---

theme_nightblue *Theme Nightblue*

Description

A theme inspired by the RStudio nightblue editor theme

Usage

```
theme_nightblue(
  base_size = 14,
  base_family = "",
  axis = "",
  ticks = "",
  grid = ""
)
```

Arguments

base_size	numeric. Base font size in pt
base_family	character. Base font family

axis	character. Where to draw an axis line
ticks	character. Where to draw axis ticks
grid	character. Where to draw grid lines

Value

An object of class theme

Author(s)

Thomas Neitmann

See Also

For more details see the 'theme' vignette: vignette("theme", package = "ggcharts")

Examples

```
library(ggplot2)
library(dplyr)

scatter <- ggplot(mtcars, aes(hp, mpg)) +
  geom_point(color = "#EBBBFF")

scatter + theme_nightblue()

scatter + theme_nightblue(grid = "XY")

scatter + theme_nightblue(axis = "xy", ticks = "xy")

bar_chart(ggplot2::diamonds, cut, bar_color = "darkorange") +
  theme_nightblue(axis = "y", grid = "Y")

column_chart(ggplot2::diamonds, cut, bar_color = "darkorange") +
  theme_nightblue(axis = "x", grid = "X")

ggcharts::biomedicalrevenue %>%
  filter(company == "Roche") %>%
  ggplot(aes(year, revenue)) +
  geom_line(color = "yellow", size = 1) +
  scale_y_continuous(expand = expand_scale(c(0, .05))) +
  theme_nightblue(grid = "X", axis = "x", ticks = "x")
```

Index